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To: Brandon McDonald
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From: Ex. 4 - CBI
Data Reviewer

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Subject: Inorganic Data Validation (S4VM)
Site: Miller Chemical
Case: R34651 SDG: C0DE0

Overview

Case R34651, Sample Delivery Group (SDG) C0DE0, consisted of six (6) drinking water samples including one (1) field duplicate pair analyzed for anions, total metals, cyanide (CN^-) and Total Organic Carbon (TOC). Anion analyses were performed by ion chromatography according to EPA Method 300.0; total metals analyses were performed by ICP-AES for calcium (Ca), iron (Fe), magnesium (Mg), potassium (K) and sodium (Na) according to EPA Method 200.7, and by ICP-MS for all other target compounds according to EPA Method 200.8; CN^- analyses were performed by spectrophotometry according to SW-846 Method 9012B; and TOC were analyzed utilizing TOC analyzer according to Standard Method (SM) 5310B. Analyses were performed by TestAmerica Savannah and TestAmerica Edison.

Summary

Data were validated with guidance from inorganic National Functional Guidelines, and is assigned the Superfund Data Validation Label S4VM (Stage_4_Validation_Manual).

Samples were submitted to the laboratory directly by the contractor and not through the EPA Technical Services Branch (TSB). Environmental Services Assistance Team (ESAT) has been tasked to evaluate laboratory reported data for the purpose of usability.

No drinking water sample in this SDG reported a result which exceeded the National Primary Drinking Water Regulations (NPDWRs) Maximum Contaminant Level (MCL), nor did they exceed the Numeric Removal Action Levels for Drinking Water promulgated by the Office of Solid Waste and Emergency Response (OSWER).

Anions by EPA Method 300.0

Positive results reported for sulfate and nitrite in laboratory blank analyses were below Reporting Limits (RLs). No positive results were reported for nitrite in samples. Positive results for sulfate were greater than RLs for all samples. No data were qualified in this fraction based on blank contamination.

Percent recoveries and Relative Percent Differences (RPDs) in nitrate/nitrite Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) analyses were within control limits. No data were qualified based on LCS/LCSD precision.

Percent recovery for sulfate in matrix spike analysis and RPD in laboratory duplicate analysis of sample C0DE1 were within control limits. No data were qualified based on these findings.

Matrix spike recovery was high (>125%) for nitrate. High recovery may be attributed to matrix interferences. Positive results for this analyte may be estimated high and have been qualified "J+".

The RPD in the laboratory duplicate analysis was within control limits (20 RPD, $\pm$ RL) for nitrate/nitrite. No data were qualified based on laboratory duplicate precision.

Manual integrations, which were performed and identified by the laboratory, were evaluated by the reviewer to be accurate and consistent. No action was taken by the reviewer based on manual integrations.

Metals analysis by EPA Methods 200.7 and 200.8

Matrix spike recoveries were high (>125%) for copper (Cu), nickel (Ni) and zinc (Zn). Matrix spike duplicate recoveries were high for Cu and Zn. The RPD was outside the control limit (20 RPD, $\pm$ RL) for Ni. Post-digestion spike recoveries were within control limits. High recoveries may be attributed to matrix interferences. Positive results for these analytes are estimated and have been qualified "J".

The RPD in the laboratory duplicate analysis was outside control limits (20 RPD, $\pm$ RL) for vanadium (V). Positive results for this analyte are estimated and have been qualified "J".

Laboratory instrumentation reported a negative value for sodium (Na) in ICP interference check standard ICSAB greater than the absolute value of the MDL; however, this analyte was not included in this standard. The positive result reported for this analyte in sample C0DE5, which was less than ten times (<10X) the absolute value of the interference check standard concentration, may be estimated low due to possible elemental interferences and has been qualified "J-".

Positive results reported for thallium (Tl) in laboratory blank analyses did not qualify field sample data.
Percent recoveries in the LCS analysis were within control limits. No data were qualified based on LCS precision.

Percent differences (%Ds) in the ICP serial dilution analysis were within control limit (>10%). No data were qualified based on ICP serial dilution precision.

Cyanide and TOC by SW-846 Method 9012B and SM 5310B

CN^- and TOC have been positively identified in laboratory blanks associated with the samples in this SDG. Samples which reported positive results for CN^- less than the RL have been qualified "B". Positive results for TOC were greater than RLs for all samples and were not qualified based on these outliers.

Percent recoveries and RPDs for matrix spike/matrix spike duplicate analyses of sample C0DE1 were within control limits for CN^- and TOC. No data were qualified based on matrix spike/matrix spike duplicate precision.

Percent recoveries for LCS analyses were within control limits for CN^- and TOC. No data were qualified based on LCS precision.

Notes

Accuracy and precision criteria were met by the laboratory in the initial and continuing calibration verification standard analyses associated with the samples in this SDG. No data were qualified based on these findings.

Analytes detected below RLs are qualified "J" unless qualified "B" due to blank contamination.

Results reported for field duplicate pair C0DE3/C0DE7 were within twenty (20) RPD, $\pm$ RL for all analytes. No data were qualified based on field duplicate precision.

Glossary of Data Qualifier Codes

U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
B	The result is presumed a blank contaminant. This qualifier is used only for drinking water samples.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

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